

## CLAIMS

What is claimed is:

1. A device for use in a reliable electrical power supply system, said device comprising:

a rectifier, said rectifier including an AC input and a DC output, said rectifier operable to convert AC electrical power received at said AC input to DC electrical power at said DC output; and

a capacitor, said capacitor having a first side and a second side, said first side coupled to said DC output of said rectifier;

wherein said device also includes at least three connection points to which other devices may be coupled, the first connection point coupled internally to said rectifier AC input, the second connection point coupled internally to said rectifier DC output and said first side of said capacitor, and the third connection point coupled internally to said second side of said capacitor.

2. The device of claim 1 wherein said third connection point is intended to connect to electrical ground.

3. The device of claim 1 wherein said rectifier is operable to provide at least 48 volts DC at said second connection point.

4. The device of claim 1 wherein said capacitor is a super capacitor.

5. A power supply system for providing reliable electrical power to a telecommunications facility, said facility containing telecommunications equipment, said system comprising:

an AC power source; and

at least one rectifier/super capacitor device, each of said devices including a rectifier operable to convert said AC electrical power to DC electrical power adaptable to power said telecommunication equipment and a capacitor, said capacitor coupled to the output of said rectifier;

wherein each of said rectifier/super capacitor devices also includes at least three connection points to which other devices may be coupled, the first connection point coupled internally to said rectifier AC input, the second connection point coupled internally to said rectifier DC output and said first side of said capacitor, and the third connection point coupled internally to said second side of said capacitor; and

wherein said AC power source is coupled to said first connection point, said second connection point is coupled to said telecommunication facility, and said third connection point is coupled to ground.

6. The system of claim 5 wherein said AC power source is at least one microturbine generator operable to produce AC electrical power and adapted to be powered by a fuel.

7. The system of claim 6 wherein said fuel for said at least one microturbine generator is natural gas.

8. The system of claim 7 wherein said natural gas is supplied by a commercial utility.

9. The system of claim 5 wherein said fuel for said at least one microturbine generator is propane.

10. The system of claim 9 wherein said propane is stored on site.

11. The system of claim 5 wherein said AC power source is a commercial electric utility.

12. The system of claim 5 further including a first switching mechanism that is operable either to couple at least one microturbine generator to said first connection point or to couple a commercial electric utility to said first connection point.

13. The system of claim 5 further comprising at least one proton exchange membrane that is operable to produce DC electrical power adaptable to power said telecommunication equipment, said at least one proton exchange membrane adapted to be powered by a fuel, said proton exchange membrane coupled to said second connection point.

14. The system of claim 13 wherein said fuel for said at least one proton exchange membrane is hydrogen.

15. The system of claim 13 further including a second switching mechanism operable to switch from said DC power produced by said at least one rectifier/super capacitor device to DC power produced by said at least one proton exchange membrane.

16. A power supply system for providing reliable electrical power to a telecommunications facility, said facility containing telecommunications equipment, said system comprising:

at least one proton exchange membrane, said proton exchange membrane including a fuel input and an electrical output, said proton exchange membrane operable to convert fuel received at said fuel input to generate DC electrical power at said electrical output;

at least one rectifier/super capacitor device, each of said devices including a rectifier operable to convert said AC electrical power to DC electrical power adaptable to power said telecommunication equipment and a capacitor, said capacitor coupled to the output of said rectifier;

wherein each of said rectifier/super capacitor devices also includes at least three connection points to which other devices may be coupled, the first connection point coupled internally to said rectifier AC input, the second connection point coupled internally to said rectifier DC output and said first side of said capacitor, and the third connection point coupled internally to said second side of said capacitor; and

wherein said electrical output of said at least one proton exchange membrane is coupled to said second connection point, said second connection point also coupled to said telecommunication facility, and said third connection point is coupled to ground.

17. The system of claim 16 wherein said fuel for said at least one proton exchange membrane is hydrogen.

18. The system of claim 17 wherein said hydrogen is stored on site.

19. The system of claim 16 further including an AC power source coupled to said first connection point and a switching mechanism operable to switch from said DC power produced by said at least one rectifier/super capacitor device to DC power produced by said at least one proton exchange membrane.

20. The system of claim 19 further including control means for monitoring AC power produced by said AC source and DC power produced by said at least one proton exchange membrane and for causing said switching mechanism to be an open circuit so long as said DC output from said at least one proton exchange membrane remains below a predetermined value and to be a short circuit when said DC output from said at least one proton exchange membrane exceeds said predetermined value.